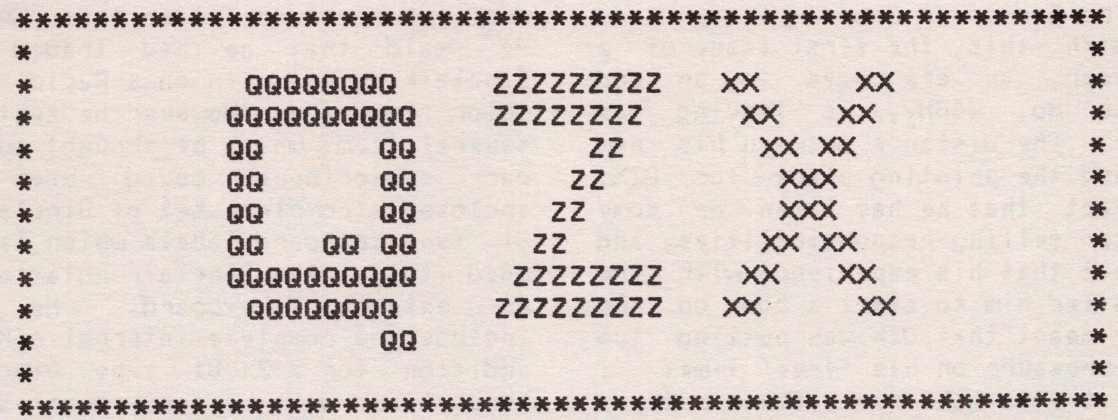

The Journal Covering Amateur Radio & Sinclair Computers
ZX-80; Micro-Ace; ZX81; T/S 1000, 1500, & 2068; QL

2025 O'Donnell Drive
Las Cruces, New Mexico
88001

K5XY
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Publisher

W4GHV
Bo Barry
Editor

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Publisher's Notes
K5XY

The End of an Era

With this, the first issue of a new year, an era comes to an end because Bo, W4GHV, is leaving as editor. The distance between his new job and the printing plant for QZX, the fact that he has taken on some computer selling responsibilities, and the fact that his experience with the QL has led him to start a book on the 68000 meant that QZX was putting too much pressure on his "free' time. I shall try to take his place, but my time too is somewhat restricted. I have not had time, for instance to redesign the mast head mainly because I could not think of a good way to remove his name and retain symmetry without increasing the depth. QZX will miss Bo. If you want to drop him a QSL expressing appreciation for his efforts, his address is Bo Barry, W4GHV, 8118 Kensington Lane, Harrisberg, NC 28075. Everybody likes to know that their efforts are appreciated and a card will let him leave QZX with the feeling that his time had been well spent. If you are going to the Charlotte Hamfest in March, look him up for an eyeball.

I was in Crystal City, VA (next to Washington, DC) for a week in January. While there Steve Greene, KA1LM/4, who wrote the review of the ZX 88 which appeares in this issue, invited me over to his office on the eighth floor of a fancy new office building. He is building a new home and hopes to have an antenna up soon so he can get his ZX 81 back on packet. In the meantime he keeps his hand in as a member of the CATS Sinclair users group. He says that it is a very active group most of the members of which use a T/S 2068 or QL. The club tries to make group purchases like the color monitor that Steve was able to get for his QL.

In an attempt to reinterest members who have let their subscriptions to QZX drop, I have been sending a sample issue of QZX to remind them that we are still publishing and that the Sinclair computers are still alive and well. I received a return letter from WA5DUC. He said that he had traded his Sinclair computer in on a Radio Shack Color computer. However he sent QZX several items which he thought some of our subscribers could use. He enclosed a complete set of Sinclair ZX 81 type keyboard labels which can be used to put the Sinclair notation on an external keyboard. He also included a complete internal 64K RAM addition for a ZX 81 type Sinclair. These items will be sent, courtesy of WA5DUC, to the first subscriber who can use them and who sends me a name, address, and postage ($0.22 for the keytop labels and $0.56 for the RAM).

QL RAM Expansion

The circuit (next page) is an application of the TMS4500A controller for RAM expansion of the 68008. This controller can drive 128K maximum of dynamic memory sending all needed signals: RAS*, CAS*, refresh, and address multiplexer.

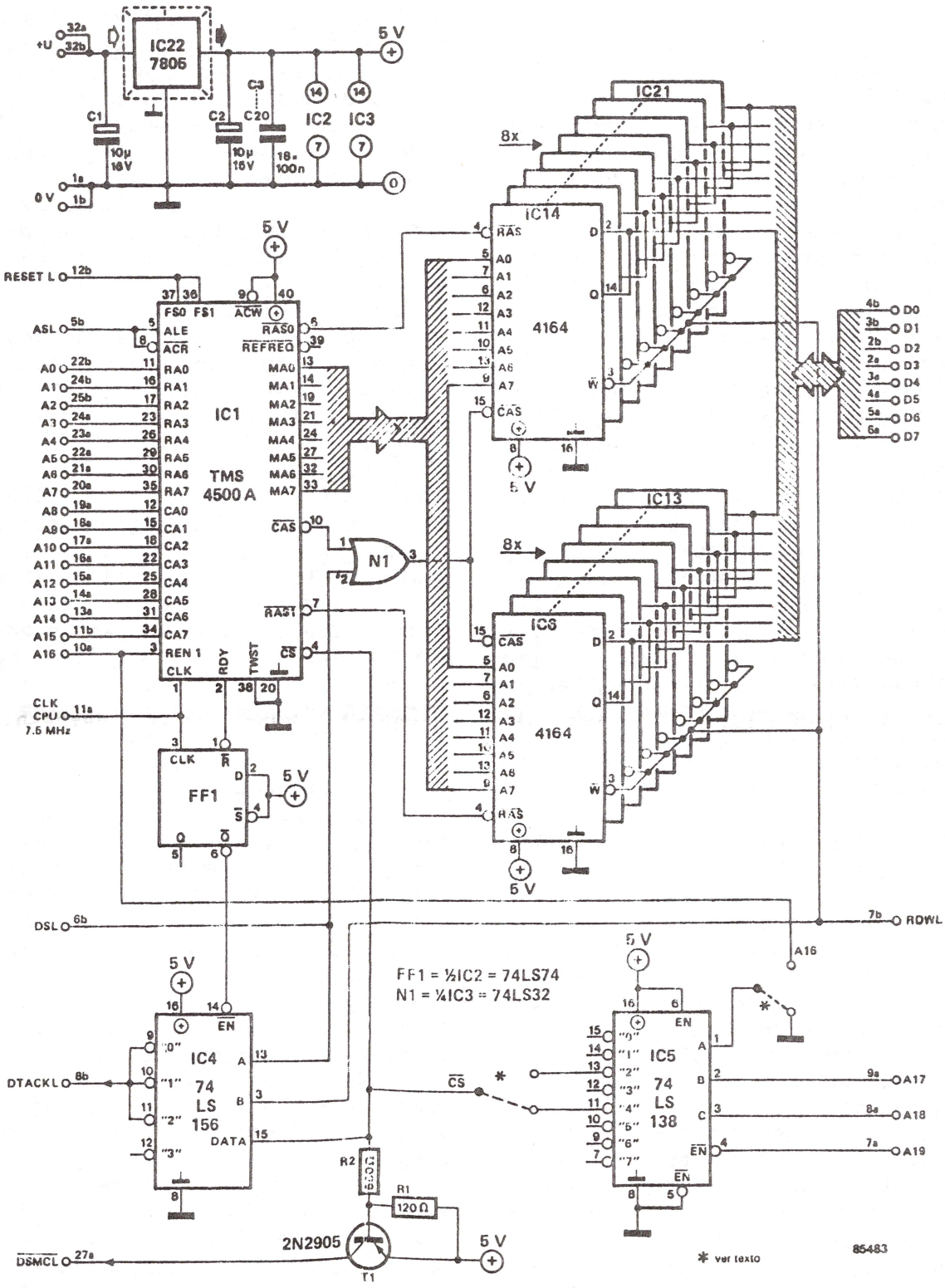
The memory chips are type 64K x 1 (128 to 256 cycles of refresh) with a speed of 150 ns.

QL's use a clock frequency of 7.5 MHz, in place of the normal 8 MHZ, so this memory works without delay cycles.

The 68008 family have an imput of 'recognition of data' (DTACK*). This circuit provides that signal with the help of the 74LS156 (IC 4). Normally, this pulse is delivered immediately, but if the 4500 is in refresh cycle, the CPU is obliged to wait, this executed by output RDY (pin 2).

To avoid the CPU to be waiting permanently when reading an address without memory, the signal DTACK* is generated internally; when addressing memory of the expansion device, the signal DTACK* is inhibited by DMSC*. Setting rapidly DMSC* to high, internal DTACK* is deactivated.

Be sure to put 100 nF bypass caps on all the ICs.



Circuit Diagram for QL RAM Expansion
Author unknown, translation by LU8MAD
from ELEKTOR Magazine - July/Aug 1986

Z88 REVIEW
KA1LM/4 Steve Greene

There's been a great deal of anticipation and speculation regarding the new Z88 laptop computer from Clive Sinclair's new company, Cambridge Computer. Can a Z-80 based machine be a success in an Intel 808xx and Motorola 680x0 world? Keep in mind that the Z-80 is STILL the most popular microprocessor chip in the world, and that the power (and the high price!) of an 80386 or 68020 simply isn't required in many applications.

I had a chance to see and play with a Z88 recently, and thought QZX's many Timex and Sinclair users would be interested in my impressions. While I haven't bought a Z88, I'd sure like to (now if I can just convince my wife...). Also, except for having purchased some miscellaneous QL accessories from him, I have absolutely no connection with Mark Steuber or Sharp's Inc. Keep in mind that these are my initial thoughts, as I only had a few minutes to try the Z88 myself (there were 40 others waiting a turn!). One CATS member has purchased a Z88 - he says he loves it!

The Z88 Laptop - Has Sir Clive Finally Scored a Hit?

At the December meeting of The Capital Area Timex Sinclair Users Group (CATS), Mark Steuber of Sharp's Inc. gave us a chance to see Sir Clive Sinclair's Cambridge Computer's latest wonder - the Z88 laptop computer. Will this machine finally be the one that gives Sir Clive the "mainstream" success he has long deserved?

The first two things you notice about the Z88 are its color (black) and its size (small). The Z88 is about the size of an 8 1/2 by 11 inch notebook, and not much thicker. When you pick it up, you notice the Z88 is also very light - under two pounds! For comparison, most of the popular MS-DOS laptops weigh well over ten pounds and are much larger.

The next surprise comes when you turn the machine on (by pressing both SHIFT keys simultaneously). The Z88's supertwist liquid crystal display is small, but excellent. Made by Epson, it is 8 rows by 90 characters, ample for a small laptop computer. A Tandy Model 100 owner in the audience commented that the display was far superior to the one in his Tandy. We had no trouble reading the display over a TV monitor as one of the CATS members videotaped Mark's talk.

The keyboard uses a grid instead of bubble membrane keys, and is completely covered in flexible black rubber. This makes it not only rugged, but coffee-spill proof! The keys are in a standard QWERTY layout, with various control keys arrayed along the periphery. Key action is very quiet and has a good feel. I tried typing quickly, as if I were taking notes, and had little trouble. The keys do feel to be a little more widely spaced than I am used to, making the shift key a little harder to use. Still, this is the best keyboard ever on a Sinclair, and it's on a par with those for many other laptops.

The Z88 comes well equipped with the software that should be most needed by the typical owner: a combination word processor, spreadsheet, and database program, a diary, a calculator, a calendar, a clock, a terminal emulation program, and BASIC. The word processor is probably the best of the lot, and only lacks a spelling checker. The terminal program emulates a VT52 terminal, and allows the Z88 owner to transfer files via a serial port to a modem or directly to a QL or MS-DOS computer.

The Z88 has a new operating system, called OZ, that ties all of the software together. OZ is menu driven, and you can stop work within a particular application, shift to another one, than go back to the first one (or start yet anothe application) using various combinations of special function keys and the cursor keys or

single letter keys. A "quick reference card" showing the keys to activate the most used features is mounted just below the display.

Memory in the Z88 is an adequate 32K of RAM, plus 128K of ROM for the built-in programs. Three expansion ports in the front of the Z88 take 32K or 128K RAM or EPROM cartridges. The Z88 has a maximum memory expansion of 3 megabytes, once expansion cartridges using 1 megabyte chips become available. The RAM is kept fresh by the built-in batteries even when the machine is turned off, and the rugged construction makes the "wobble and die" problem of the old ZX81 a thing of the past.

The Z88 has several "outlets" to the world. A RS-232 standard serial port on the right side of the computer runs from 300 to 9,600 baud for connecting a modem, serial printer, or another Z88, QL, or MS-DOS computer for file transfers. Another access slot is slated for connecting planned full screen RGB displays and disk drives (hopefully 3.5 inch, NOT 3 inch!). Another slot provides access to the entire data bus.

Battery life is the bane of the MS-DOS laptops, but not so for the Z88! Four AA batteries (alkaline preferred) will run the basic machine for over 24 hours, and Mark believes they could keep memory fresh for over a year. A 6 volt ac adaptor can be plugged in to supplant the battery pack. Batteries are disconnected when the ac adaptor is used, so don't try to charge nicad batteries in the Z88! A large "super-capacitor" can keep RAM fresh for several minutes if you have to change batteries away from a wall outlet. I'd have preferred a lithium battery myself, but the capacitor seems to work.

Mark said the Z88 has been selling well in England since it's introduction in the fall. The "official" U.S. release is scheduled for this February. Cambridge Computer, Sir Clive's new company that developed the Z88, is looking for a few quality distributors in the US rather than taking a mass-market approach. Mark is filling orders for British Z88's as fast as he can get them, and doesn't expect any changes for the U.S. model. As of December 7, 1987, his price was $479 for the Z88, $35 for the 32K RAM or ROM, and $85 for the 128K RAM or ROM. Cables and interface software to exchange files with QLs and MS-DOS computers are available. Because of the rapid deterioration of the dollar versus the pound, Mark expects he'll be force to raise these prices soon. Call him at Sharp's for the latest prices and availability before you send any money.

How good is a Z88 for ham radio use? The addition of a disk drive would make this the only computer I'd need in the shack. I couldn't check for RFI, but the absence of many unshielded holes should minimize it. The display is very readable, and many BASIC programs for ham use should translate with few problems. The serial port will let you use most of the computer-controlled interfaces and radios on the market. With its small size and low power consumption, the Z88 would be superb in portable and emergency packet radio use.

Does Sir Clive have a "mainstream" success? It's too early to tell. The machine is far superior to the Tandy Models 100 and 200, but the market is MS-DOS crazy these days. Still, for what most people really need laptops for, the Z88 should fulfill their needs. The Model 100 sold very well, so the potential is there. The Z88 sells for half the price of the least expensive MS-DOS laptop, and is truly portable. While it can't run Lotus 1-2-3, dBase, or WordPerfect, it has everything I'd look for in this type of machine.

To be a success, the promised hardware expansions and third party software (already well underway in England) are needed, and the marketing problems that plagued Sinclair's earlier ventures in the US must be avoided. And finally, the "mainstream" of the personal computer

industry has to lower the MS-DOS blinders it has on and take an open-minded look at this product. On it's merits, I think the Z88 is a winner.

Z88 Laptop Computer, Cambridge Computer

Sharp's Inc. Route 10, Box 459, Mechanicsville, VA 23111 (804)746-1664 9:00 AM - 4:00 PM EST

OPUS <=> FIDO
K5XY

The QZX BBS has changed its basic operating system. It used to be a FIDO board but it is now an OPUS board. The software involved is quite different, but the operation is almost the same from a user's point of view.

The board still opens with a menu and allows you to select the message or files section. The board still sends and receives messages from any other BBS on the FIDO network. There are no changes whatsoever if you just want to send FIDO mail from your local node. The board is just a little more flexible at this end.

The user sees almost the same interface as was described in the November 1985 issue of QZX which described the QZX BBS. It is still node 15/6 in the FIDO network and the direct telephone is still (505) 522-7081. In fact my automatic logon procedure still works.

But once you are inside a few changes are apparent. To get to the message area from the initial menu, type M. The message area will present help on all the commands if you type ?. A x where x is an integer will get you a particular message area. There are 10 different messages areas on this board. Area 1 is the general area which I check regularly. Area 5 is the area that FIDO messages show up in. It is called the MATRIX area. Whenever you enter the message section you are returned to the area which you last left.

Most readers will be interested in the FILES section. There are 36 different file areas. File areas 31 and 32 are devoted to Timex/Sinclair related files. Most of the files are of past and upcoming QZX articles. Most of these files are in ASCII format although some of them are designed for use with WordStar. These WordStar files are being phased out. The newer files are in file area 32.

There is no overall help file for the prompts in the file section, although some of the commands have their own help file. The commands available in the file section are described below.

1. A - Area change. There are 36 different areas. The Sinclair files are in areas 31 and 32. If just A is typed you will get a list of all the areas available. To change areas, type A x where x is the area number desired.

2. L - Locate. Tries to match a string, which is prompted for, to a file name or description in all the areas.

3. F - returns a list of all the FILES in the area you are in.

4. T - displays (TYPES) a requested file.

5. G - Goodbye. Signs you out.

6. U - Upload. Follow the prompts.

7. D - Download. Follow the prompts.

8. S - returns STATISTICS on your use of the BBS.

9. M - returns you to the main menu.

10. R - lists the size and upload date of files.

11. C - will display the contents of ARC or LBR files. These types of files will not usually be found in the TIMEX areas.

To give you an idea of how the board looks on your screen, I add here a recent message exchange.

From: David Hopper
To: Steve Greene
Subject: TSPACKET

Rec'd
Msg #34, 26-Nov-87 01:23pm

HELLO, STEVE...FINALLY CHECKED BACK IN AND SAW YOUR MESSAGE. I HAVE 3 TS UNITS ON PACKET. I SWAP BETWEEN A TS1000 AND A TS1500 FOR PORTABLE OPERATION (USING THE COMLINK BOARD), AND A TS2068 FOR THE SHACK SET-UP. THEY WORK VERY WELL....MAYBE I CAN CONNECT SOMETIMES WHEN I AM PORTABLE UP THAT WAY! 73...DE DAVID, WD4JKH, IN FORSYTH, GA...SK

*** There is a reply. See #38.

[34] Highest: 38. Press Enter for NEXT msg.
Msg.area 5 ... Amateur Radio Messages
A N P E R = - + L S I M G K H F O U X ?
Select: 38

From: Steve Greene
To: David Hopper
Subject: TS Packet

Msg #38, 01-Dec-87 07:04am

Easiest way to get ahold of me is via msg on AMRAD BBS (703)734-1387 or Muse City (703)534-8911.
I'm not on Packet very much so far in VA - lousy antenna and path situation to digis and PBBS, but that'll improve alot when I move this spring.
Picked up a QL, looking forward to trying that out Real Soon!
73 de KA1LM/4, Fairfax VA

GREY & CLIFFORD COMPUTER PRODUCTS
P.O. Box #2186
INGLEWOOD, CALIFORNIA 90305
(213) 759-7406 OR 516-6648

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THE Z-SI/O CARD PROVIDES A "REAL" RS-232C SERIAL I/F FOR THE T/S2068 COMPUTER. IT HAS THE STANDARD DB25 CONNECTOR AND FEEDS THROUGH ALL OF THE BUSS LINES AVAILABLE AT THE REAR OF THE T/S2068. THE 'STOCK' Z-SI/O USES PORT 9FH FOR DATA AND PORT BFH FOR CONTROL/STATUS (VERSIONS AVAILABLE FOR THE JLO OR AERCO DISKS SYSTEMS).

THE Z-SI/O IS SOLD WITH A 26+ PAGE USER/TECHNICAL MANUAL FOR $79.00 + $3.50 S & H.

SPECTERM-64 (ver. 4.1) Terminal Software

SPECTERM-64 TERMINAL SOFTWARE IS AVAILABLE FOR EITHER THE T/S2068 (VER. TS-4.1) OR THE SPECTRUM (VER. ZX-4.1). THIS IS CURRENTLY THE ONLY TERMINAL SOFTWARE FOR THESE COMPUTERS WITH 1200 BAUD CAPABILITY. AMONG ITS OTHER FEATURES ARE 64 COLUMN DISPLAY, XMODEM FILE TRANSFERS, 31+K BUFFER AREA, FULL SCREEN COLOR CONTROL AND MUCH MORE. IT CAN BE CUSTOMIZED TO WORK WITH THE Z-SI/O CARD OR ALMOST ANY RS232 I/F (INCLUDING A MODIFIED 2050).

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EQUIPMENT SPECIALS

This is a occasional column in which we will list some of the equipment in which we think our readers will be especially interested or which appear to be special bargains. If you have suggestions for items to appear here send them in. If you have comments on the items which appear here send them in too. The information here is as accurate and as complete as we can make it, but is listed here only as an indication as to what might be available. Any decision to purchase should only be made after further investigation.

ITEM	COMMENTS	$	ID
ZX81	Computer only	$20	HT
WC2050	untested modem board	$10	GC
2050 to rs232 conversion		$20	ZS
All Timex computers		varies	EB
MTERM II for T/S 2068		$30	ZS
	advanced terminal software		EB
Above	in cartridge form	$35	ZS
The Complete Guide to MTERM II		$ 7	BC
	Booklet on MTERM II		
TS2068		$140	SE
TS1500	complete	$80	SE
TS1000		$40	SE
Computer Repair		varies	SE
Computer Repair		varies	DE
TS2068 to spectrum romswitch		$40	RE
T/S software		varies	WM
QL hardware and software		varies	QC
T/S 2068 packet stuff		$110	GC
T/S 1000 packet stuff		$55	AE

ID	Addresses
HT	Hal-Tronix, Inc. Box 1101 Dept QZX Southgate, MI 48195 (313) 285-1782
ZS	Zebra Systems 78-06 Jamaica Ave. Dept QZX Woodhaven, NY 11421 (718) 296-2385
SE	Sunset Electronics 2254 Taraval Street Dept QZX San Francisco, CA 94116 (415) 665-8330
EB	E. Arthur Brown Co. 3404 Pawnee Drive Dept QZX Alexandria, MN 56308 (612) 762-8847
BC	Barry Carter Box 614 Dept QZX Warren, MI 48090
GR	G. Russell Electronics RD1 Box 539 Dept QZX Centre Hall, PA 16828 (814) 364-1325
QC	Quantum Computing Box 1280 Dept QZX Dover, NJ 07801 (201) 328-8846
WM	WMJ Data Systems 4 Butterfly Drive Hauppauge, NY 11788 (516) 543-5252
DE	Dan Elliott RT1 Box 117 Cabool, MO 65689 (314) 739-1712
GC	Grey & Clifford Computer Products Box 2168 Inglewood, CA 90305 (213) 759-7406
AE	A. Eckhardt 918 Anna Street Boalsburg, PA 16827

QL BOOK REVIEW
K5XY

Taking the Quantum Leap, by Mike de Sosa. Time Designs Magazine. 8 1/2 x 11, Mimeographed, 276p., $26.

The subtitle of this book is "The Last Word on the Sinclair QL". In one sense it may be, in that it is unlikely that another book of this size will be published in the US. In another, more disappointing, sense, it is not. I expected a more advanced book, going far beyond the User's Guide furnished with the QL. But with chapters entitled "What to Do When the QL Comes", sections on "locating your QL computer set-up", and hints on why not to put it on a card table, it is clear that great funds of insight are just not going to come.

My guess is that the book was designed to be a comprehensive introduction to the QL ready to be bought when the QL hit the mass market. Unfortunately Sinclair's troubles and the delayed introduction to the US market, probably caused the originally intended publisher to lose interest.

Nevertheless the thorough study the author has made ot the QL is apparent and useful information is to be gained from the book even by those who have already studied the User's Guide which comes with the QL. If you bought a QL without software and Guide, this is the book for you. The author takes a more unified and less step-by-step look at the QL system. I got a little new information about each of the software programs and a little more information about the serial ports used to connect to packet TNC's.

The book is nothing if not up-to-date. It was published only yesterday, it seems. Chapter 14 on "New Developments" will be very useful to the QL owner who is considering additions like disk drives and RAM disks.

The book itself is reasonably produced. It was written on the QL and T/S 2068. The typeface used is much better than some of the typefaces I have been seeing in newsletters produced by publishing programs for our computers. But nevertheless it is harder to read than the QL User's Guide. It is mimeographed rather then xeroxed of photo-offset, but an above average mimeograph job has been done.

BITS AND BYTES

109 Here is a method for deletina a block of consecutive lines from a BASIC program on the T/1000, T/S 1500, and ZX 81. Let us suppose that you have a program which ytou want to change by deleteing everything after line 287 up to but not including line 500. The steps are as follows:

(1) Add these five lines

```
288 LET S = PEEK 16425 + 256 * PEEK 16426-50
289 LET L = E-S
290 POKE S + 1, INT (L/256)
291 POKE S,L - 256 * PEEK (S+ 1)
292 STOP
```

(2) Add these 2 lines

```
498 LET E = PEEK 16425 + 256 * PEEK 16426 + [ 10 + number of digits in the line number of the first line that we added (ie. 288)]
499 GOTO 288
```

(3) Use the direct command GOTO 498 <ENTER>
You will get report code 9/292 on the TV screen)

(4) Use the direct command GOTO 288 <ENTER>

110 A bug in the ROM of the T/S 2068 causes problems when the DELETE (Cap Shift/0) is held down to delete multiple characters in the edit line. Sometimes it outputs the DELETE keyword instead of just deleting characters as it should in the auto-repeat mode. This oddity is especially noticeable when the edit line is long. The cure is to try releasing and pressing the DELETE key at differing frequencies.

UNCLASSIFIED ADS

WANTED: UNCLASSIFIED ADS for publication in QZX. Cost is 1 cent for each keystroke (characters, blanks, etc.). Payment must be included with order. This is an excellent way to sell your program or unwanted equipment, ask for help, or find a specific program. Send your ad with payment to QZX, 2025 O'Donnell, Las Cruces, NM 88001.

WANTED: Documentation or schematic for "Compusa" FDC-100 Controller. Edward L Radtke, WA4BQE, 1602 Woodluck Ave., Louisville, KY 40205. 1-502-458-7324

WANTED: T/S 2068 computer w/ps & manual plus anything that goes with it. Hal Schweikart WB3JOP, 753 Yeadon Ave., Yeadon, PA 19050

FOR SALE: Index to QZX consisting of a bound book of xerox copies of all the covers since December 1982. Send $5.00 plus $1.00 shipping and handling ($2.00 if to a non-US address) to QZX, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: ZX Spectrum computer 48 K color & sound with 60 Hz 120 V supply. Computer output on ch. 33 UHF TV band. Complete package w/ prints and manuals, some software. $75.00 mint cond. James Zilvilis WA1JBS, 46 Hart St., Watertown, Conn 06795.

WANTED: I would like to receive correspondence from Sinclair 1000 owners who have had experience with Eckhardt's "COMLINK I" device and Microlog's "SWL" device. Gerald C. Stillman, 128 Highland Ave., Salem, MA 01970.

QZX FRIENDS

W5JEJ -- Joe rejoined after several years away. He has recently acquired a QL and is looking for some ham software for it as well as some information on the use of the T/S 2068 to receive Weather maps.

WA4BQE -- Edward spent some time in the Las Cruces area recently visiting his son and seeing some of the sights in the region.

WA6OUC -- Warren arranged to have a notice about the QZX T/S Users net which meets Saturday mornings at 10:00 on 7.235 MHz put in the FOGHORN, the world's largest users group magazine (probably). His efforts are greatly appreciated.

KB3KD -- Tom renewed and says that he looks forward to each issue.

W9BS -- Jerry says that he has a ZX 81 and two T/S 1000's which are being modified with a keyboard, Z-dubber, inverse video board, and various other goodie for use on his ATV transmitter.

W6OOA -- Al said the October issue was great (he also said that he could not always say that). From his card I gathered that he thought that the article by LU8MAD was responsible for the excellence of the issue and that in appreciation he would send the program that LU8MAD had been asking for in the unclassified ads. I am glad that Al could do this because LU8MAD certainly deserves recognition for his efforts in this series of articles.

KA8RNY -- Bill renewed and said that he was particularly looking for a good way to use his T/S 2068 to send and receive CW.

K7JGR -- Ed sent in a little extra with his renewal to compensate for increased printing costs. He also sent special thanks to LU8MAD for his articles. He said that he always gets smarter reading his contributions and complimented him on not being afraid to share his knowledge.

73, K5XY

QZX presents the best software & hardware projects available for the radio amateur. While the contents are believed to be accurate, no warranty is extended on any program or project. No investigation has been made of the claims or reputation of any advertiser. It would be greatly appreciated if all correspondence requiring an answer would be accompanied by a self-addressed stamped envelope (SASE). Copyright by QZX, 1988. All righs reserved, photocopying by permission only.

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